

MANAS MANDAL, M. Sc., Ph.D.

Fulbright S cholar

Roseman University of Health Sciences

College of Pharmacy

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Faculty Appointment

1. Professor of Pharmaceutical Sciences, Roseman University of Health Sciences, College of Pharmacy: July 2021-
2. Associate Professor of Pharmaceutical Sciences, Roseman University of Health Sciences, College of Pharmacy: July 2011- June 2021.
3. Adjunct Associate Professor, Roseman University of Health Sciences College of Dental Medicine, 2009- present.
4. Adjunct Associate Professor, Roseman University of Health Sciences College of Medicine: Jan 2015- present.
5. Adjunct Faculty, Touro University Nevada: Sept 2013-present.
6. Adjunct Faculty, JSS Academy of Higher Education & Research, Mysuru, India: Dec 2018-present.
7. Assistant Professor of Pharmaceutical Sciences, University of Southern Nevada College of Pharmacy, Henderson, NV: July 2006- June 2011.
8. I Sciences College of Pharmacy,
University of Michigan, MI, June 1997- April 2001.
2. Postdoctoral Fellow, Gwen Knapp Center for Lupus and Immunology Research and Department of Pathology, University of Chicago, Chicago, IL: December 1994- April 1997.
3. Research Fellow, Department of Microbiology and Immunology, the Chicago Medical School, North Chicago, IL: January 1993- December 1994.
4. Senior Research Fellow, Calcutta School of Tropical Medicine, Calcutta, India: 1991- 1992.
5. Junior Research Fellow, Calcutta School of Tropical Medicine and Indian Institute of Chemical Biology, Calcutta: 1987- 1991.

Education

Ph. D., Science, 1992, Jadavpur University, Calcutta, India.

M. Sc., Physiology (I class), 1985, Presidency College, University of Calcutta, India.

B. Sc., Physiology (Honors), 1983, City College, University of Calcutta, India.

Ph. D. Dissertation: Active immunization of rabbits and mice with gamma irradiated detoxified viper venom as toxoid.

Awards

- Fulbright Scholarship by the Fulbright Foreign Scholarship Board (FFSB), August 2021.
- Nehru-Fulbright Commission of US-India Educational Foundation (USIEF) approval of the proposal 'Infection, Immunity and Immune-based Therapeutics', September 2020.
- US Dept. of State Fulbright Commission approved the proposal in May 2021.
- USN intramural research grant for 'development of a cell-based assay system for immune response study', \$10,000, 2007-08.
- Upjohn and Vahlteich Award, UM, College of Pharmacy. Project: 'Liposomal adjuvant-based vaccine delivery system development', \$40,000, 2003-2004.
- Senior Research Fellowship, Indian Council of Medical Research, India. 'Russell's viper venom vaccine development', 1991-1993.

Experimental Research

- Salivary biomarker research for determination of skeletal maturation in orthodontics patients. 2012-ongoing.
- 'Drug induced immune modulation' using 'statin' as a candidate drug: 2012 -ongoing.
- Study of immune response modifier drugs using a cell-based assay system: 2009 - present, College of Pharmacy, Roseman University.
- Subunit vaccine against tularemia, and O-antigen mutant of Francisella as avirulent and protective in nature: 2004-2006, Center for Molecular Medicine and Infectious Diseases, College of Veterinary Medicine, Virginia Tech, VA.
- Vaccine carrier-specific preexisting immunity in the development of vaccine antigen-specific immunity, comparative study of liposome-based cytosolic delivery of protein in macrophages and dendritic cells: 2001-2004, College of Pharmacy, University of Michigan, MI.
- Liposome-mediated cytosolic delivery of vaccine antigen priming anti-tumor and anti-viral protective CTL responses: 1997-2001, College of Pharmacy, University of Michigan, MI.
- MHC class Ib molecules, CD1 in NK T cell development, and H2-M3 in bacterial antigen presentation to T cells, generation of monoclonal antibody specific to CD1 & H2-M3: 1994-1997, Gwen Knapp Center for Lupus & Immunology, University of Chicago, IL.
- Purification and characterization of an immunosuppressive factor from murine fetoplacental unit: 1993-1994, The Chicago Medical School, IL.
- Snake venom vaccine development, detection of snake venom in patient serum, and epidemiology of snake-bite: 1987-1992, Calcutta School of Tropical Medicine & Indian Institute of Chemical Biology, India.

Educational Research

- Market trend analysis of biologicals.
- Student knowledge retention
- Early intervention in academic progression.
- Faculty perspective on research in teaching focused Colleges of Pharmacy.
- Faculty mentoring and professional development.

Teaching

1. Instructor for Pharmaceutical Sciences Master's Program.
MS 630- Concepts in Biomedical Sciences: Principles of Immunology, Dec 2021-

2. Primary instructor, block coordinator, and assessment leader for Hematology & Immunology block (PHAR 413) 2006- present: P1 students,

- AACP Biological Sciences Section

- Member, PPRC subcommittee
- Coordinator, Levelling Course committee
- Member, COM LCME Faculty subcommittee
- Member, COM LCME Faculty Issues subcommittee
- Member, COM Infection and Host Defense curriculum committee

2013-14

- Curriculum Committee
- Assessment Committee

2012-13

- Curriculum Committee
- Assessment Committee

2011-12

- Curriculum Committee
- Assessment Committee
- Grants Steering Committee, University-wide

2010-11

- Faculty Senate, University-wide: Vice-president
- Fringe benefits committee, University-wide: member
- Curriculum committee: member
- Assessment committee: member

2009-10

- Faculty Senate, University-wide: Vice-president
- Fringe benefits committee: member
- Faculty development committee: member
- Assessment committee: member
- Recruitment committee: member

2008-09

- By-Laws committee: member
- Curriculum committee: member
- Fringe Benefits committee, University-wide: member

2007-08

- Assessment committee: secretary
- Educational Resources Committee: *ad-hoc* chair
- Curriculum Committee
- Planning, Priority and Resources Committee

2006-07

- Assessment committee: secretary
- Admission committee

- Conducted exit interviews for graduating seniors 2-3 days in the years: 2014-13, 2012-13, 2011-12, 2010-11, 2009-10, 2008-09, 2007-08 & 2006-07.

Service to the Profession

Served American Association of Colleges of Pharmacy (AACP), American Association of Pharmaceutical Scientists (AAPS), National Association of Board of Pharmacists (NABP), and Accreditation Council of Pharmacy Education (ACPE) in various capacities serving on the committees, reviewing grants, abstracts, posters, writing questions and conducting accreditation site visits.

- Chair, American Association of Colleges of Pharmacy (AACP) Biological Sciences Section Faculty Mentorship Committee, H565 0 Td ,, H565 0 Td ,, eety <</MC12,,I, (2010)JTJ 0 Tc 0 Tw

- Volunteered at the Asian Community Development Council (ACDC), Las Vegas Covid-19 vaccine clinic, April 18, 2021.

Review (recent)

- Invited to serve as a Guest Editor for a Special Issue of AIMS Microbiology journal on COVID-19.
- External reviewer for promotion application of Dr. Jennifer Hernandez, Assistant Professor at KGI School of Pharmacy and Health Sciences, April 2021.
- Editor and Reviewer, Microbial Toxins in Handbook of Toxinology, Springer 2015-2017.
- External reviewer for promotion and tenure application of Dr. Christopher L. Farrell, Assistant Professor, Presbyterian College, School of Pharmacy, September 2015.
- Internal reviewer for application of promotion of Dr. Arup Chakraborty, Assistant Professor, Roseman University College of Pharmacy, 2014.
- AACP annual meeting abstract reviewer: 2014, 2013 & 2012.
- AACP SoTL Grant reviewer: 2019-20 cycle.
- AACP New Investigator Award Grant reviewer: 2020, 2019, 2018, 2017, 2015, 2013 & 2012.
- AAPS annual meeting abstract reviewer: 2021, 2020, 2019, 2018, 2017, 2015, 2014 & 2013.
- AAPS NBC 2022 annual meeting proposal (18) reviewer on career development on behalf of AAPS Career Development Committee.
- American Journal of Pharmacy Education (AJPE) Student Leadership theme issues 1 and 5 manuscript reviewer, 2012.
- Manuscript reviewer for Inflammopharmacology, 2012, 2011.
- Manuscript reviewer for Phytotherapy Research, 2020-21.
- Member of the editorial board for AIMS Microbiology 2021-2023.

Relevant S kills

- Experience with educational technology platforms: Canvas, Blackboard, ExamSoft, CoreELMS, Water mark & Turnitin.
- Taught online courses, and administered assessments, seminars

Workshop/ Training (recent)

- Item writing workshop for the National Association of Boards of Pharmacy: 2021, 2019, 2018, 2017,

4. Luu, C., Bateman, K., Bollu, P and Mandal M. Relationship between salivary sex steroids and skeletal maturity in orthodontic patients". *Manuscript communicated to AJODO.*
5. Bateman, K., Luu, C., Bollu, P. and Mandal M. Correlation of salivary insulin-like growth factor-1, testosterone, estrogen and cervical vertebral maturation staging in orthodontic patients. *Manuscript in preparation.*
6. Patel, P., Bateman, K., Luu, C., Bollu, P. and Mandal, M. Salivary sex steroids, height, weight and skeletal maturity in orthodontic patients. *Manuscript in preparation.*
4. Mandal, M. Bacterial Pore-Forming Toxin in Macromolecule Delivery: Lessons Learned from Listeriolysin O. *Handbook of Toxinology: Microbial Toxins*, Springer, Ch. 17, Pg 317-328, 2017.
5. Unni, EJ., Mandal, M., Rajan, R., Johanson, E., and Jorvig, E. Knowledge Retention of Basic Pharmaceutical Sciences in a PharmD program. *Currents in Pharmacy Teaching and Learning*. 8: 827-832, 2016.
6. Li, J*, Ryder C*, Mandal, M*, Ahmed, F., Azadi, P., Snyder, D. S., Pechous, R. R., Zahrt, T., and Thomas J. Inzana. 2007. Attenuation and protective efficacy of an O-antigen-deficient mutant of *Francisella tularensis* LVS. *Microbiology*, 153: 3143-3155 [*equal contribution].
7. Stier, E., Mandal, M. and Lee, K. -D. 2004. Differential cytosolic delivery and presentation of antigen by listeriolysin O-liposomes to macrophages and dendritic cells. *Molecular Pharmaceutics*. 2: 74-82.
8. Mandal, M., Kawamura, K., Wherry, E.J., Ahmed, R. and Lee K. -D. 2004. Cytosolic delivery of viral nucleoprotein by listeriolysin O-liposome induces enhanced specific cytotoxic T lymphocyte response and protective immunity. *Molecular Pharmaceutics*. 1: 2-8.
9. Mandal, M., Mathew E., Provoda C., and Lee, K. -D. 2003. Delivery of macromolecules into cytosol using liposomes containing hemolysin. *Methods in Enzymology* 372 (Ch. 18): 319-339.
10. Mandal, M. and Lee, K. -D. 2002. Listeriolysin O-liposome-mediated cytosolic delivery of macromolecule antigen in vivo: Enhancement of antigen-specific cytotoxic T lymphocyte frequency, activity, and tumor protection. *Biochim. Biophys. Acta*. 1563: 7-17.
11. Chiu, N. M., Chun, T., Fay, M., Mandal, M. and Wang, C.-

19. Hati, R. N., Mandal, M. and Hati, A. K. 1990. Active immunization of rabbit with gamma irradiated Russell's viper venom toxoid. *Toxicon* 28: 895-902.
20. Hati, A. K., Hati, R. N., Mandal, M., Panda, D. and Das, S. 1989. The effect of gamma irradiated detoxified viper venom as a toxoid against viper venom. *Snake* 21: 36-40.

Abstracts

1. Mandal, M., Mandal, S., Vale, J. and Vinciguerra, A. COVID-19 Vaccine Hesitancy or Acceptance in High School Students. Poster presented at the AACP Annual Meeting, Virtual Pharmacy Education 2021, July 22.
2. Mandal, M. 'Pandemic Preparedness: Development of an Elective Course on Infection and Immunity'. Poster presented at the AACP Annual Meeting, Virtual Pharmacy Education 2021, July 22.
3. COVID-19 Vaccine: Technology Platform, Efficacy and Immune Protection. Mandal, M., Roseman Research Day Symposium April 14, 2021.
4. Covid-19 Vaccine: Hesitancy or Acceptance in High School Students. Mandal, S., Vale, J., Vinciguerra, A and Mandal, M. Roseman Research Day Symposium April 14, 2021.
5. Emerging Role of Pharmacists in Treatment and Vaccination for Covid-19. Dwaynie Bacon, D., Ha, M. and Mandal, M. Roseman Research Day Symposium April 14, 2021.
6. Effect of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) immunodominant peptide antigens on human oral mucosal, nasal and corneal epithelial cells. Mandal, M., and Dey, S. AAPS PharmSci 360 Annual Meeting, Oct-Nov, 2020 (virtual).
7. 'Best Practices for Developing Effective AACP Mentoring Programs and Relationships for Pharmacy Faculty'. Kinney, S., Eiland, LS., Calinski, DM., Mandal, M., Novatt, J., Borgelt LM., Dell KA and Smith SE. AACP Annual Meeting, July 2020 (virtual).
8. 'Bugs and Biodrugs: Incorporating Emerging Biological Sciences Topics into the Pharmacy Curriculum'. Calinski, DM., Weldon, A., Johnson JL., and Manas Mandal . AACP Annual Meeting July 2020 (virtual).
9. Veeramacheneni M, Mandal, S and Mandal M . Once conquered, back with vengeance: recent measles epidemic in USA. Roseman Research Day Symposium, March 11, 2020.
10. Patel, P., Bateman, K., Luu, C., Bollu, P and Mandal, M . The Relationship between salivary estrogen and testosterone with height, weight, and skeletal maturation in orthodontic patients. Pacific Coast Society of Orthodontists (PCSO)/RMSO Annual Session, Honolulu, HI, Oct 3-5, 2019. Presented at the competitive award session.
11. Mandal, M. Salivary biomarkers, skeletal maturation and treatment decision in orthodontic patients. AAPS Annual Meeting (2021), July 10-15, 2021, Virtual Pharmacy Education 2021, July 22-27, 2021.

Against Cancer (American Cancer Society) ae3277 0 Td [(Ma)-12.3 (nda)-p2 (])o

National Conference on Animal, Microbial, Plant Toxins and Snakebite Management” jointly organized by Indian Institute of Chemical Biology & KPC Medical College & Hospital, Kolkata, India, 11-12 December 2010.

26. Mandal, M. and Lee, K-D. Preexisting Listeriolysin O (LLO)-specific Immunity does not Impair Generation of LLO-liposome Encapsulated Vaccine Antigen-specific Immune Response. Abstract # T2048, AAPS Annual Meeting, Nov 16-20, 2008, Atlanta, GA.
27. M. Mandal, Berg, G. and Inzana, T. J. 2006. Lipopolysaccharide O-antigen Deficient *Francisella tularensis* Primes Cell-mediated Immune Response and Confers Protection to Francisella Infection. 18th Annual Research Symposium, “Translational Research”, abstract# 74 May 23-24, 2006. The Virginia-Maryland Regional College of Veterinary Medicine, Virginia Polytechnic and State University, VA.
28. Mandal, M., Berg, G. and Inzana, T. J. 2005. Cell Surface Antigen of *Francisella tularensis* in Infection and Immune Response. 17th Annual Research Symposium, abstract# 25, May 16-17 2005. The Virginia-Maryland Regional College of Veterinary Medicine, Virginia Polytechnic and State University, VA.
29. Mandal, M., Berg, G. and Inzana, T. J. 2005. Role of Cell Surface Antigen of *Francisella tularensis* in Infectivity and Replication within Macrophage. American Society for Microbiology, 105th General Meeting, abstract# E-024, June 5-9, Atlanta, GA.
30. Mandal, M. and K.-D. Lee. 2002. In vivo cytosolic delivery of a viral vaccine antigen for priming antigen-specific cytotoxic T lymphocyte response. American Association of Pharmaceutical Scientists' (AAPS) annual meeting, abstract# AM02-01251, Toronto, Canada.
31. Mandal, M. and Lee, K.-D. 2001. In vivo cytosolic delivery of exogenous antigen mediated by listeriolysin O: enhanced cytotoxic T-lymphocyte induction and tumor protection. The 28th International Symposium on Controlled Release of Bioreactive Materials, San Diego, CA.
32. Mandal, M. and Lee, K.-D. 2000. Listeriolysin O-containing liposome-mediated cytosolic delivery of exogenous antigen. Selected for oral presentation at the American Association of Immunologists (AAI) annual meeting, Immunology 2000, Seattle, WA.
33. Lee, K.-D., Mandal, M., Dutta, S. and Reinhardt, C.A. 1999. A novel vaccine carrier targeting the cytosol of dendritic cells. Keystone Symposia on Molecular & Cellular Biology. HIV vaccine development: opportunities and challenges. Keystone, Co.
34. Mandal, M. and Lee, K-D. Listeriolysin O-containing liposomes as protein antigen vaccine carriers. AAPS, 1999, New American Association of Colleges of Pharmacy, Council of Faculties (AACP COF) Faculty Affairs Committee member: 2010-11 Orleans, LA.
35. Mandal, M., Dutta, S. and Lee, K.-D. 1998. Listeriolysin O-containing liposomes as T cell vaccine carriers. AAPS, abstract# 2541, San Francisco, CA.
36. Mathew, E., Larson, G., Mandal, M., Reinhardt, C., Leamon, C., Hardee, G. and Lee, K.-D. 1998. Cytosolic delivery of antisense oligonucleotide using liposomes containing endosomolytic listeriolysin O. AAPS, abstract# 2489, San Francisco, CA.
37. Mathew, E., Larson, G., Mandal, M., Reinhardt, C., Leamon, C., Hardee, G. and Lee, K.-D. 1998. Listeriolysin O-containing liposomes as an efficient cytosolic delivery vehicle for antisense oligonucleotides. Antisense 98, pg 42-43, London.
38. Wang, C.-R., Mandal, M. and Chiu N. 1996. Characterization of murine CD1. ASBMB/ASIP/ AAI joint meeting 1996, New Orleans, LA.
39. Mandal, M., Nichols, T. C. and Beaman K. D. 1995. Putative suppressor isoform of

TJ6: the pregnancy associated cytokine. 14th annual meeting of the American Society of Reproductive Immunology, Philadelphia, PA.

40. Mandal, M. and Beaman, K. D. 1993. A 20 kDa isoform of TJ6 from murine fetoplacental unit. 22nd Autumn Immunology Conference, Chicago, IL.
41. Mandal, M., Hati, R. N. and Hati, A. K. 1992. Gamma irradiated viper venom as a toxoid. 4th National Bio-Organic Symposium, 4th National Bioorganic Symposium, BARC, Bombay, India.
42. Mandal, M., Hati, A. K and Hati, R. N. 1990. Some biochemical and immunological aspects on the effects of irradiation on Russell's viper (*Vipera russelli*) venom. 2nd Asia-Pacific Congress on Animal, Plant and Microbial Toxins, Banaras Hindu University (BHU), India.
43. Hati, A.K., Mandal, M. and Hati, R.N. Active immunization of mice and rabbits by gamma irradiated Russell's viper (*Vipera russelli*) venom. 2nd Asia-Pacific Congress on Animal, Plant and Microbial Toxins, 1990; BHU, India.

Seminars

1. Invited webinar 'Immunotherapeutics for autoimmune diseases/disorders'. M. Mandal. Academic 'Expert Interaction Series 2022 Lecture for PharmD, M Pharm and PG students of

11.

<https://www.ktnv.com/news/coronavirus/pfizers-covid-19-vaccine-inches-closer-to-approval-las-vegas-prepares>

5. Local community PHLV radio interview 'Healthy Mondays with AAPINA of NV' with Dr. Marife Aczon-Armstrong.

Topic: Covid-19, facts and myths, April 6 & August 17, 2020.

<https://www.facebook.com/phlvradio/videos/802267413912973/?vh=e&d=n>

6. PHLV radio interview 'Healthy Mondays with AAPINA of NV' with Dr. Marife Aczon-Armstrong
Topic: Healthy Lifestyle and Immune-boosting Supplements, Nov 11, 2019.

<https://www.facebook.com/phlvradio/videos/3093510360681475/>

7. [https://new</MCIt/904 -0 0 11.04 7o/vi. >6oom/phlnewtov2 \(w\)2.7 \(i\)2.6 \(t\)-6.6cac1j 0 0 st 0 g 0ivi.Tc 0 0 st](https://new</MCIt/904 -0 0 11.04 7o/vi. >6oom/phlnewtov2 (w)2.7 (i)2.6 (t)-6.6cac1j 0 0 st 0 g 0ivi.Tc 0 0 st)

20. FOX5 TV interview with Ashley Casper- Mixing vaccines? August 13, 2021.
https://www.fox5vegas.com/news/u-s-approves-covid-19-booster-shot-for-some-high-risk-patients-no-guidance-yet/video_f402d9cd-40f4-53e3-b983-6871a2e11a6c.html
21. News 3 TV interview with Kyndell Kim on upcoming flu season during Covid-19. August 13, 2021.
22. 'Operation Vaccination- vaccine hesitancy and teen's perspective on Covid-19 vaccine'- a townhall meeting with Maria Thompson, Senior News Producer, News 3 TV, August 24, 2021.
<https://news3lv.com/news/videos/operation-vaccination-news-3-breaks-down-vaccine-questions>
23. PHLV radio 'Healthy Mondays' interview with Dr. Marife Aczon-Armstrong on Omicron variant and community safety aspects. Dec 12, 2021. <https://fb.watch/9TMJXq0SGW/>
24. News3 TV interview with Kyndell Kim on Omicron variant, and family safety during holidays. Dec 16, 2021.
25. FOX5 interview With Shannon Miller on UK study on Omicron variant infectivity and disease severity. Dec 23, 2021.
https://www.fox5vegas.com/news/study-hospitalizations-less-likely-with-omicron/video_b1043ffa-d1d3-5b37-b5f4-90121df59e27.html
26. News3 TV interview with Kyndell Kim, news anchor/ reporter on COVID-19 rapid antigen test (RAT) distribution to the public to mitigate Omicron variant infection. Jan 19, 2022.
27. Interviewed by FOX5 TV on Omicron variant transmissibility on January 20, 2022.
https://www.fox5vegas.com/news/las-vegas-doctor-explains-omicron-transmissibility/video_a22847ec-2072-5241-9f4057c7248bb2cc.html?utm_medium=social&utm_source=email&utm_campaign=user-share

References

Available upon request.